

NEW RECORDS AND SPECIES, AND TAXONOMIC ALTERATIONS IN THE MILLIPED FAMILY PAEROMOPODIDAE (JULIDA)¹

Rowland M. Shelley², Selena B. Bauer²

ABSTRACT: Diagnoses are presented for two new paeromopodid milliped species from California — *Paeromopus paniculus*, from the Merced River Valley, Mariposa County, and *Californiulus blechrostriatus*, from the eastern slope of the Sierra Nevada and the desert of Inyo County. *Paeromopus buttensis* is reduced to subspecific status under *P. angusticeps* because of a newly discovered intergrade male from central Sonoma County and reinterpretation of *P. ocellatus* in western Solano County, which is comprised of anatomically intermediate forms and placed in synonymy under *P. a. buttensis*, new status. New localities of *Californiulus dorsovittatus* and *C. yosemitensis* in Lassen, Modoc, and Siskiyou counties connect the formerly disjunct Warner Mountain population of the latter to the main ranges of the genus and family. The southern area of *C. yosemitensis*, extending from Mariposa to Kern counties, is segregated from that from Placer County northward because the species has never been collected in El Dorado, Amador, and Calaveras counties. The distribution of *C. euphanus* in western Washington extends eastward into the western periphery of the Columbia Plateau.

The endemic west-Nearctic diplopod family Paeromopodidae (order Julida) includes the longest millipeds on the North American continent and is comprised of two genera, *Paeromopus* Karsch and *Californiulus* Verhoeff. According to Shelley (1994), it occupies a continuous area along the Pacific Coast and the Sierra Nevada and Cascade Mountains from central California to northern Washington, and occurs in the Warner Mountains, on the contiguous corners of California, Nevada, and Oregon, and from northeastern Oregon and southeastern Washington to western Montana. *Paeromopus* is restricted to California and extends along the Pacific Coast from Humboldt to Monterey counties and the western slope of the Cascades and Sierras from Shasta to Mariposa counties; *Californiulus*, however, inhabits all six states but is absent from coastal California. The recent discovery of substantial new material among unsorted millipeds in six institutions, including a new species from the California desert, prompts publication of supplemental distributional data. With new records from western Modoc, eastern Siskiyou, and northern Lassen counties, the disjunct area of the family and *Californiulus* in the Warner Mountains now connects with the rest of the range in northern California; the ranges of these taxa also expand longitudinally in the south into the deserts of central Inyo County, California, and in the north into the western periphery of the Columbia Plateau, in Yakima County,

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² North Carolina State Museum of Natural Sciences, P. O. Box 29555, Raleigh, NC 27626-0555.

Washington. As a male is now available, we diagnose a new species for the previously unassignable females of *Paeromopus* from Mariposa County, California, and we reduce *P. buttensis* Chamberlin to subspecific status under *P. angusticeps* (Wood) based on an anatomically intermediate male from Sonoma County and reinterpretation of *P. ocellatus* Loomis, which we place in synonymy under *P. a. buttensis*. No additional samples are available for *P. eldoradus* and *P. cavicolens*, both by Chamberlin, *C. chamberlini* (Brolemann), and *C. parvior* (Chamberlin), so their accounts are as published by Shelley (1994).

Acronyms of sources of the new material are as follows:

- AMNH - American Museum of Natural History, New York, New York.
- BYU - Monte L. Bean Life Science Museum, Brigham Young University, Provo, Utah.
- CAS - California Academy of Sciences, San Francisco.
- FSCA - Florida State Collection of Arthropods, Gainesville.
- LACMNH - Los Angeles County Museum of Natural History, Los Angeles, California.
- NCSM - North Carolina State Museum of Natural Sciences, Raleigh.
- UCB - Essig Museum of Entomology, University of California at Berkeley.
- UCD - Bohart Entomological Museum, University of California at Davis.

Paeromopus angusticeps (Wood)

On the basis of new material, we interpret *P. ocellatus* and a male from a geographically intermediate locality in Sonoma County as intermediate between *P. angusticeps* and *P. buttensis*, so the two most widespread forms of *Paeromopus* are races of a single species. Consequently, the genus is comprised of one widely distributed and three localized species.

Distribution. With this taxonomic change, the range of *P. angusticeps* consists of two branches, one extending along the Pacific Coast from Humboldt to northern Monterey counties and the other extending along the western slope of the Cascades and Sierra Nevada from Shasta to Tuolumne counties (Fig. 11).

Paeromopus angusticeps angusticeps (Wood), NEW STATUS

Figs. 1-2

The southern subspecies, *P. a. angusticeps* occurs around San Francisco/San Pablo and Monterey Bays. The distributional limits are Mill Valley in southern Marin County, Castro Valley, Alameda County, and the literature record from Pacific Grove, Monterey County (Chamberlin 1941). Material was examined from the following new localities; the initials JSB and MRG in this and succeeding accounts denote samples collected by J. S. Buckett and M. R. Gardner.

CALIFORNIA: **Santa Clara Co.**, 6 mi (9.6 km) SE Holy City, M, 29 December 1966, MRG, S. E. Harrison (UCD). **Santa Cruz Co.**, 2 mi (3.2 km) NW Boulder Cr., M, 29 December 1966, MRG, S. E. Harrison (UCD); 3 mi (4.8 km) NNE Soquel, F, 21 April 1972, C. E. Griswold (UCB); Santa Cruz, Empire Cv. on Univ. Calif. Santa Cruz campus, F, 7 August 1962, R. Graham (FSCA); and Mt. Madonna E of Watsonville, M, 4 July 1958, W. J. Gertsch, V. Roth (AMNH).

Remarks. The female from Empire Cave, Santa Cruz County, was the subject of the photo in Shelley (1994, fig. 2). At the time that work was published, the specimen had not been discovered in the FSCA holdings.

***Paeromopus angusticeps buttensis* Chamberlin, NEW STATUS**

Figs. 7-8

Paeromopus buttensis Chamberlin, 1954:232. Buckett, 1964:18.

Paeromopus ocellatus Loomis, 1972:260, figs. 1-5. Shelley, 1994:187-188, figs. 27-28. NEW SYNONYMY.

The northern subspecies, *P. a. buttensis* is the most wide spread representative of the genus. The distribution is essentially as described by Shelley (1994), but the southern coastal limit is in northern Sonoma County, and records are now available from Lake, Nevada, Placer, and Yuba counties (Fig. 11). We place *P. ocellatus* in synonymy here because the subterminal branch of the midlength projection (Fig. 5, mlp) of its anterior gonopod is long and resembles the condition in this subspecies. Material was examined from the following new localities:

CALIFORNIA: **Amador Co.**, along Consumnes R., SE Latrobe, 2M, 5F, 26 November 1965, MRG (UCD). **Butte Co.**, 6 mi (9.6 km) SE Stirling City, M, 14 May 1967, S. R. Kutcher (UCD); and 2 mi (3.2 km) S Camp Storrie, exact location unknown, M, 20 June 1964, JSB, MRG (UCD). **Calaveras Co.**, Avery & 1 mi (1.6 km) E Avery, 30M, 27F, 26 March 1966, JSB, MRG (UCD). **El Dorado Co.**, 1 mi (1.6 km) E & 1 mi (1.6 km) NE Pacific House, 4M, F, 21 March-2 May 1992, W. D. Shepard (NCSM); 6 mi (9.6 km) S El Dorado, 3M, 2F, 28 November 1964, JSB, MRG (UCD); Camino, F, 19 April 1969, K. Lorenzen (UCD); and Pollock Pines, M, 20 February 1966, R. Denno (UCD). **Humboldt Co.**, Redcrest, M, F, juv., 20 March 1976, and M, 25 November 1977, A. K. Johnson (FSCA); 2.2 mi (3.5 km) N Willow Creek, along CA hwy. 96, F, 10 October 1976, A. K. Johnson (FSCA); and Richardson Grove St. Pk., M, 2F, 20 March 1976, A. K. Johnson (FSCA). **Lake Co.**, 4 mi (6.4 km) NW Middletown, M, F, 21 February 1965, JSB, MRG (UCD). **Mendocino Co.**, 3 mi (4.8 km) N Branscomb, M, 17 May 1975, C. Kellner (UCB); ca. 6 mi (9.6 km) N Branscomb, F, 24 November 1974, T. L. Smith (FSCA); 7 mi (11.2 km) NW Yorkville, M, 2F, 21 December 1964, JSB, MRG (UCD); 9 mi (14.4 km) N Laytonville, 3F, 9 March 1968, JSB, MRG (UCD); 4-6 mi (6.4-9.6 km) N Potter Valley, 4M, 2F, 28 January 1967, JSB, MRG (UCD); 2 mi (3.2 km) W Willits, 24M, 26F, 25 March 1977, A. K. Johnson (FSCA); and 10 mi (16 km) N Cloverdale, F, 27 January 1967, JSB, MRG (UCD). **Nevada Co.**, Grass Valley, M, 27 May 1967, D. S. Horning (UCD); 1 mi (1.6 km) SW Grass Valley, M, 10 February 1968, JSB, MRG (UCD); and 5 mi (8 km) NW Alta, 11M, 2F, 11 May 1969, D. A. Mead (UCD). **Placer Co.**, 9 mi (14.4 km) N Auburn, 2M,

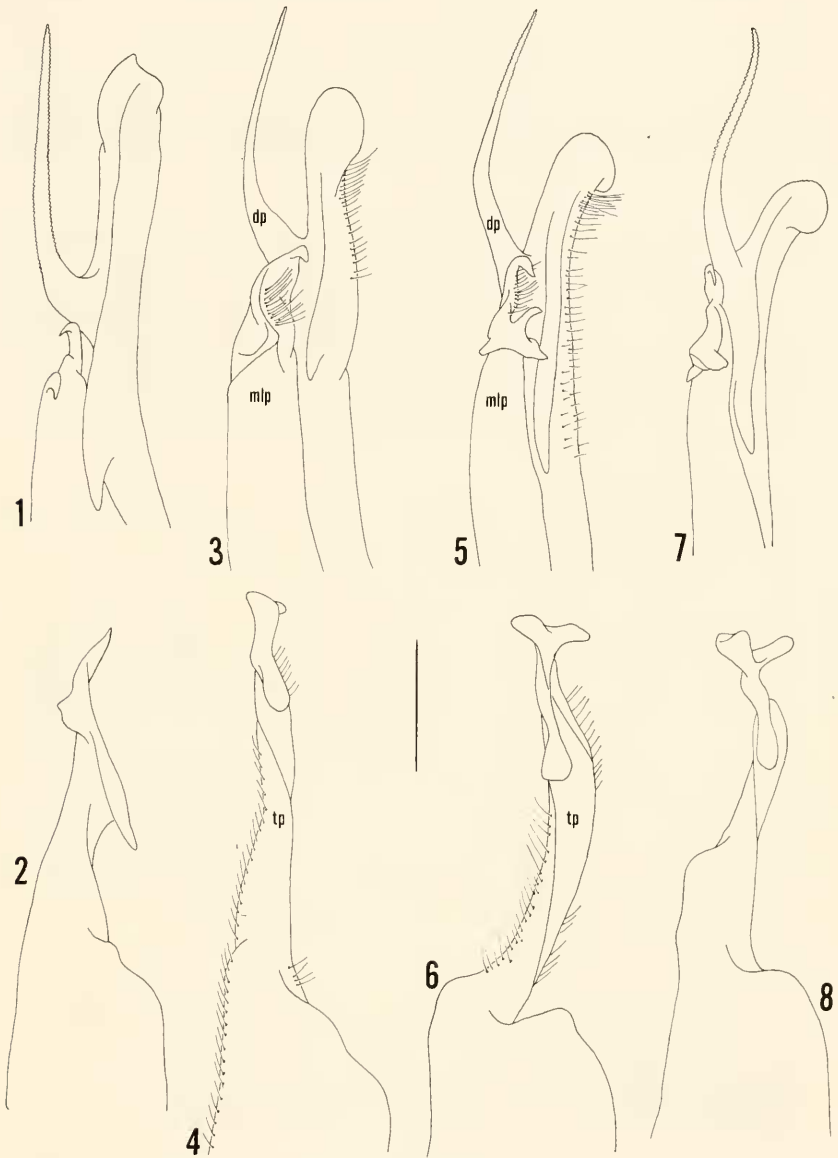
4 February 1968, MRG (UCD); 15 mi (24 km) N Auburn, 2F, 4 February 1968, MRG (UCD). **Plumas Co.**, 1 mi (1.6 km) N Elephant Butte, exact location unknown, M, 12 July 1964, JSB, MRG (UCD). **Shasta Co.**, Inwood, 2F, 26 May 1967, JSB, MRG (UCD); and 21 mi (33.6 km) W Redding, M, F, 21 December 1966, JSB, MRG (UCD). **Sonoma Co.**, 6 mi (9.6 km) NE Cloverdale, M, 21 December 1964, JSB, MRG (UCD). **Trinity Co.**, 3 mi (4.8 km) SW Douglas City, F, 21 December 1966, JSB, MRG (UCD). **Yuba Co.**, 1 mi (1.6 km) W Strawberry Valley Ranger Sta., 2F, 6 May 1980, J. T. Doyen (UCB).

Paeromopus angusticeps intergrades

Figs. 3-6

In the Sonoma County male, the subterminal branch of the midlength projection (Fig. 3, mlp) of the anterior gonopod is short and apically broad, an intermediate condition between the long, broad projection in *P. a. buttensis* (Fig. 7) and the short, uncinuate structure in the nominate subspecies (Fig. 1). On the posterior gonopod, the subterminal process of the terminal projection (Fig. 4, tp) is faint and weakly sinusoid; this condition is somewhat intermediate between that in the nominate subspecies (Fig. 2) and the dactyliform, strongly sinusoid process in *P. a. buttensis* (Fig. 8). *Paeromopus ocellatus* also occupies an intermediate geographical location in western Solano County. We believe it is comprised of intergrade forms because the subterminal branch of the anterior gonopod midlength projection typically combines features of the two races, being long with an uncinuate lateral margin (Fig. 5, mlp); the terminal projection of the posterior gonopod is variable but typically weakly convex apically with a slightly sinusoid subterminal process (Fig. 6, tp). In the holotype of *P. ocellatus*, the distal projection of the anterior gonopod bends strongly anteriad at midlength and overhangs the midlength projection (see Shelley 1994. fig. 27, dp). This configuration has not been seen again and is not characteristic of the Solano County population; we consider it an artifact, possibly from Loomis' original dissection. as the distal projection is fragile and easily bent. Material was examined from the following localities:

CALIFORNIA: **Sonoma Co.**, 7 mi (11.3 km) NE Santa Rosa, Los Alamos Rd., M, 26 November 1964, JSB (UCD). **Solano Co.**, 2 mi (3.2 km) W Cordelia, 4M, 4F, 21 December 1964, JSB, MRG (UCD); and 1.7 mi (2.7 km) W jct. Hwy. 1-80 and CA hwy. 12, nr. Cordelia, F, 23 December 1967, JSB (UCD).



Figs. 1-8. *Paeromopus angusticeps*. 1-2, *P. a. angusticeps*. 1, right anterior gonopod of male from Stanford, Santa Clara County, anterior view. 2, left posterior gonopod of the same, caudal view. 3-6, *P. angusticeps* intergrades. 3, right anterior gonopod of male from 7 mi (11.2 km) NE Santa Rosa, Sonoma County, anterior view. 4, left posterior gonopod of the same, caudal view. 5, right anterior gonopod of male from 2 mi (3.2 km) W Cordelia, anterior view. 6, left posterior gonopod of the same, caudal view. 7-8, *P. a. buttensis*. 7, right anterior gonopod of holotype, anterior view. 8, left posterior gonopod of the same, caudal view. dp, distal projection; mlp, midlength projection; tp, terminal projection. Setation omitted on figs. 1-2 and 7-8. Scale line = 1.00 mm for all figs.

Paeromopus paniculus, NEW SPECIES

Figs. 9-10

Type specimen. Male holotype (UCD) collected by J. S. Buckett & M. R. Gardner, 8 February 1969, 14.1 mi (22.6 km) E Briceburg (1.5 mi (2.4 km), W El Portal), Mariposa County, California.

Diagnosis. Color pattern consisting of transverse blue gray bands, generally indistinct from base color but becoming slightly lighter and more distinct anteriorly; anterior gonopod curved moderately laterad, apical margin sublinear, tooth very short and inconspicuous, barely noticeable in anterior view, only slightly elevated above gonopodal surface, subterminal projection of midlength projection short, barely projecting beyond surface, broadly sublinear apically, angling dorsad, distal projection upright, bowed laterad proximal to midlength, extending well beyond distal extremity of gonopod; posterior gonopod without basal spine on anterior surface medial to terminal projection, with tuft of spinules on caudomedial surface at base of latter, terminal projection upright, with torsion, without subterminal caudomedial lamina, apical lamellae slightly flared, forming calyx with longer medial margin, without subterminal process (Figs. 9-10).

Variation. The tuft on the left posterior gonopod contains about nine spinules, while that on the right contains only three.

Paeromopus paniculus is the species with the longest millipeds on the North American continent, and a 165 mm (6 1/2 in.) long female collected by the first author at Happy Isles in 1990 is the longest individual ever collected. Though possessing mature gonopods and the same total segment number (75), the male holotype may not be fully grown, as it has three legless segments and measures 79.8 mm in length, in contrast to the females from Happy Isles, which average 75 segments, none legless, and 155.6 mm in length.

Ecology. The habitat of the holotype is not indicated on the vial labels, but individuals at Happy Isles occur under moist decaying logs (Shelley 1994).

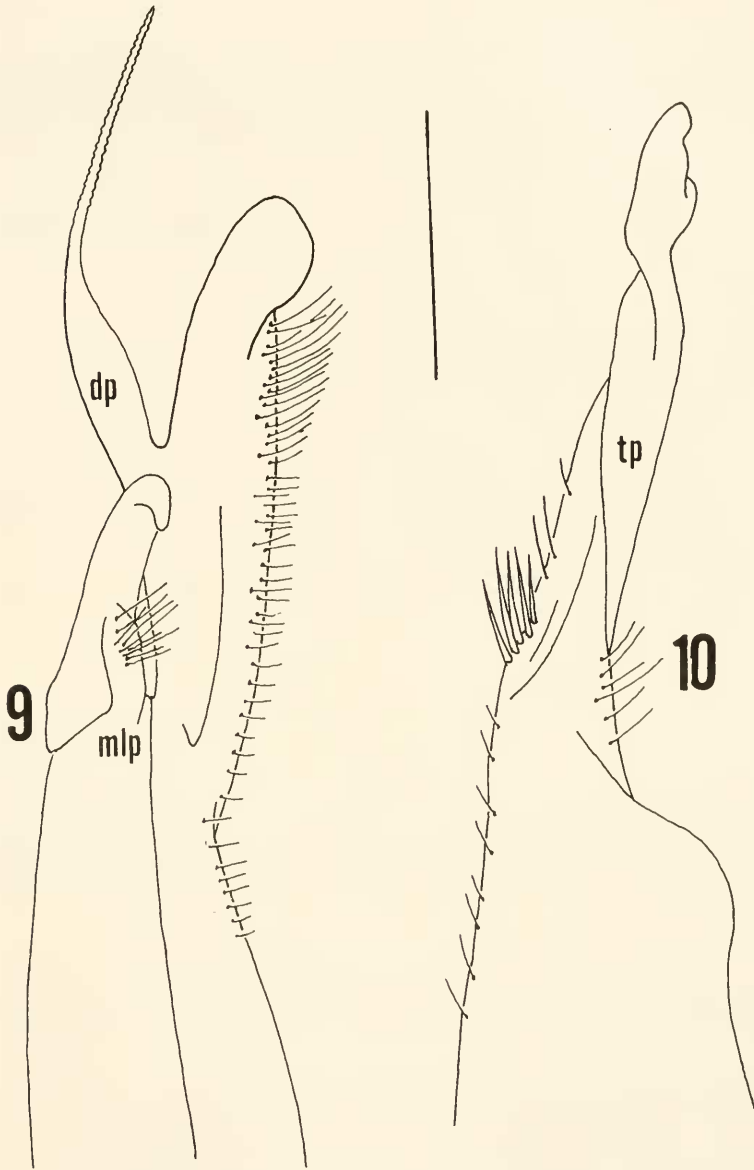
Distribution. The Merced River Valley from above Nevada Falls, Yosemite National Park, to the community of Briceburg, west of the Park along California highway 140, a linear distance of some 18 mi (28.8 km). In addition to the holotype, the following specimens are known; for convenience we repeat the records cited as *Paeromopus* sp. by Shelley (1994) (Fig. 11).

CALIFORNIA: **Mariposa Co.**, Yosemite Nat. Pk., Hidden Meadow (Lost Lake), ca. 1 mi (1.6 km) N Nevada Falls, F, 17 April 1954, J. Gorman (FSCA), Vernal Falls trail, F, 29 May 1953, J. Gorman (FSCA), Happy Isles, F, 2 April 1967, J. R. Helfer (UCD) and 2F, 23 April 1990, R. M. Shelley (NCSM), and Yosemite Valley, F, July 1952, M. Hood (LACMNH).

The following two literature records refer to *P. paniculus*:

Mariposa Co., Vernal Falls, Yosemite Nat. Pk., and Briceburg, along CA hwy. 140, ca. 15 mi (24 km) W Yosemite (Causey 1955, Buckett 1964).

Remarks. We are pleased to confirm Causey's conclusion, based on labels with the Yosemite specimens at the FSCA, which were formerly in her private



Figs. 9-10. *Paeromopus paniculus* holotype. 9, right anterior gonopod, anterior view. 10, left posterior gonopod, caudal view. Abbreviations as in figs. 1-8. Scale line = 1.00 mm for both figs.

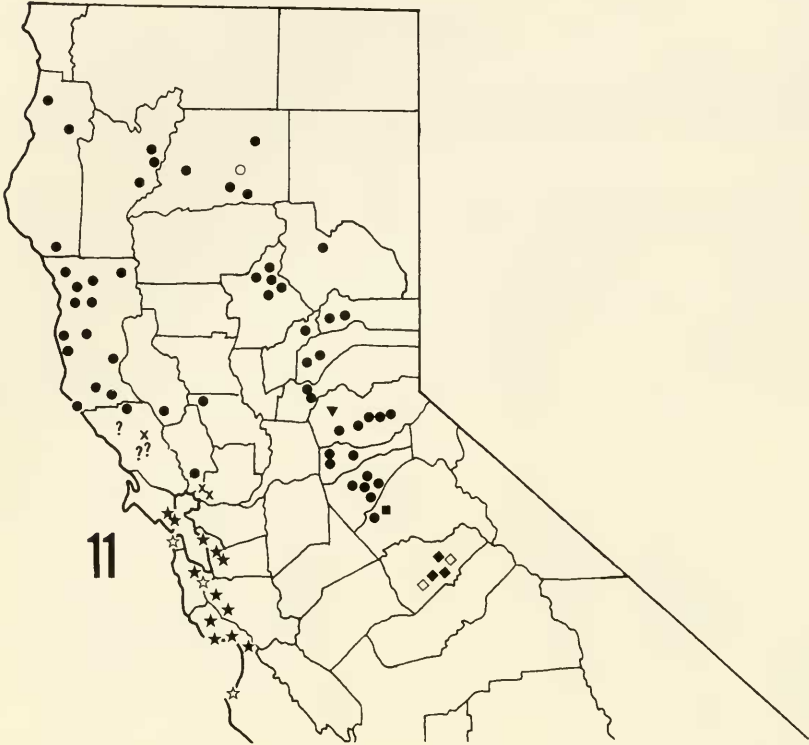


Fig. 11. Distribution of *Paeromopus*. Stars, *P. a. angusticeps*; dots, *P. a. buttensis*; X's, *P. angusticeps* intergrades; question marks, unknown forms of *P. angusticeps*; inverted triangle, *P. eldoradus*; square, *P. cavicolens*; diamonds, *P. paniculus*. Open symbols denote literature records deemed valid.

collection, that this, the southern most population of *Paeromopus* in the Sierras, does represent a new species. Shelley (1994) tentatively concurred because of the darkly banded color pattern, in contrast to the light bands of other forms of *Paeromopus*, but could not propose a name in the absence of males, which still have not been taken within Yosemite National Park. *Paeromopus paniculus* is closely related to *P. eldoradus* and comes off with this species at the second half of couplet 4 in the key to species by Shelley (1994). It is distinguished from *P. eldoradus* by the inconspicuous anterior gonopod tooth, the absence of the caudomedial lamina on the posterior gonopod terminal projection, and the presence of the tuft of spinules at the base of the latter (compare figs. 9-10 with figs. 29-30). The specific name means tuft or bush, and refers to the spinules.

Paeromopus sp.

Additional female samples from Sonoma County cannot be assigned with confidence as either intergrades or a subspecies of *P. angusticeps*. We record them here and show them as question marks in fig. 9.

CALIFORNIA: **Sonoma Co.**, 3 mi (4.8 km) N Kenwood, along Adobe Cyn. Rd., 3F, 20 December 1964, JSB, MRG (UCD); Rio Nido, F, 17 June 1916, W. Gaeggel (CAS); and Occidental, F, 29 October 1964, S. Rattoro (CAS).

Californiulus dorsovittatus Verhoeff

The distribution of *C. dorsovittatus* expands in the north and east with records from eastern Siskiyou County and central Lassen County. Material was examined from the following new localities:

CALIFORNIA: **Lassen Co.**, Silva Lake, F, 16 June 1956, P. S. Bartholomew (CAS). **Shasta Co.**, Moose Camp, exact location unknown, M, 6 July 1993, J. R. Pierson (BYU). **Siskiyou Co.**, Lava Beds Natl. Mon., M, 28 August 1966, R. C. Gardner, S. E. Harrison (UCD); 21 mi (33.6 km) E McCloud, Dead Horse Summit, along CA hwy. 89 nr. Ponderosa, M, F, 7 August 1968, H. B. Leech (CAS) and M, 18 September 1961, W. J. Gertsch, W. Ivie (AMNH); and along Tate Cr., exact location unknown, F, 24 June 1954, H. P. Chandler (CAS). **Tehama Co.**, along Deer Cr., generally E of Tehama but exact location unknown, F, 19 September 1961, W. J. Gertsch, W. Ivie (AMNH).

Californiulus yosemitensis Chamberlin

New records from central Modoc and northeastern Lassen counties expand the area of the Warner Mountains population and connect it with the main area of the genus and family in the southern Cascades, although it is still disjunct from the main area of *C. yosemitensis*. A new record is available from Nevada County, but the continued absence of samples from El Dorado, Amador, and Calaveras counties (Fig. 16) indicates that this area constitutes a lacuna within both the genus and species, but not within the family because *P. a. buttensis* and *P. eldoradus* occur in this gap (Fig. 11). Therefore, the southern area of *C. yosemitensis*, extending from Mariposa and Mono to Kern counties, is disjunct from that from Placer County northward (Fig. 16). Material was examined from the following new localities.

CALIFORNIA: **Fresno Co.**, Kings River Canyon, along Roaring River, M, 4F, July-August, 1910, collector unknown (CAS). **Kern Co.**, 2 mi (3.2 km) N L. Isabella, 2F, May 1971, E. A. Kane (UCD). **Lassen Co.**, Lost L., S. Warner Mts., F, 19 September 1964, A. B.

Gurney (UCD). **Modoc Co.**, 15 mi (24 km) N Alturas, along Joseph Cr., F, 17 June 1954, R. O. Schuster (FSCA); and Crowder Flat & Twin Spgs., ca. 7 mi (11.2 km) S Oregon border & 11-12 mi (17.6-19.2 km) W Goose L., 2F, 25 June 1974, A. K. Johnson (FSCA). **Nevada Co.**, Sagehen Cr., exact location unknown, 2M, 3F, 25 June 16-July 1960, J. J. Jarvis (UCD). **Placer Co.**, Tacoma, exact location unknown, M, 18 August 1964, MRG (UCD). **Plumas Co.**, 8 mi (12.8 km) NW Quincy, M, 21-23 June 1984, P. S. Ward (UCD); Johnsville, F, 20 September 1964, JSB, MRG (UCD) and F, July 1971, H. Pini (UCD); Mt. Ingalls, M, 5F, 11 July 1964, and M, F, 4 September 1967, JSB, MRG (UCD); and Bucks L., M, F, 4 July 1964, and M, 7 September 1964, L. L. Dunning (UCD). **Tulare Co.**, Kings Cyn. Nat. Pk., Redwood Cyn., Redwood Saddle, M, 17 August 1984, V. F. Lee, T. S. Briggs, D. Ubick (CAS); Sequoia Nat. Pk., nr. Crystal Cv., M, 13 July 1961, S. B. Peck (FSCA); Mineral King, M, 2F, date unknown, P. S. Bartholomew (CAS); and Quaking Aspen Cpgd., Sequoia Nat. For., M, 9 September 1959, W. J. Gertsch, V. Roth (AMNH). **Tuolumne Co.**, Pinecrest, M, 14 June 1965, JSB (UCD).

Californiulus euphanus (Chamberlin)

The only new record of *C. euphanus* extends its range in western Washington eastward into the western periphery of the Columbia Plateau (Fig. 16). Sample data are as follows:

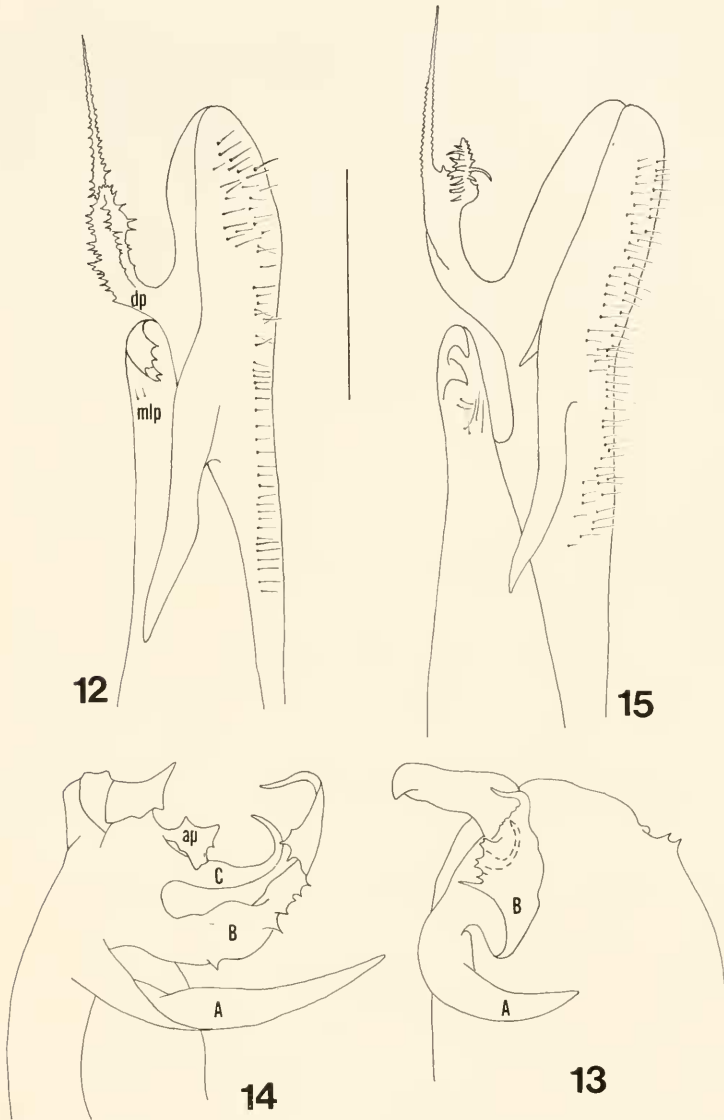
WASHINGTON: **Yakima Co.**, 10 mi (16 km) N Yakima, juv. M, 8 May 1948, E. S. Ross (CAS).

Californiulus blechrostriatus, NEW SPECIES

Figs. 12-15

Type specimens. Male holotype (CAS) collected by B. Banta, 5 April 1959, at an unknown site in Saline Valley, Death Valley National Park, Inyo County, California; one male and two female paratypes (CAS) taken by the same collector, 2 April 1960, along Grapevine Canyon Rd., Saline Valley.

Diagnosis. Color pattern subuniformly dark brown, caudal margins of collum and pleuroterga 2-4 slightly darker but otherwise without trace of transverse banding; pleurotergal striation very faint and shallow, barely noticeable, exoskeleton appearing generally smooth; anterior gonopod ridge curvilinear, tooth moderately long, angling strongly mediad, overhanging groove and nearly overhanging medial margin, distal projection either divided with short, irregular inner branch, or simple and expanded basally, with numerous spiculate projections, margins serrate to jagged, extending to level of distal extremity of gonopod; subterminal projection of posterior gonopod divided into 4 branches, with short, slightly expanded and laminate, accessory process arising ventrad below process 'C'; process 'A' entire, not distally divided, with one termination; process 'B' broad and laminate, moderately expanded mediad, obscuring process 'C' in anterior view, marginally irregular with fine teeth and moderate indentations; process 'C' slightly expanded basally, falcate distad, tip well segregated from that of termination of 'B' (Figs. 12-15).



Figs 12-15. *Californiulus blechrostriatus*, holotype. 12, right anterior gonopod, anterior view. 13, distal extremity of right posterior gonopod, medial view. 14, the same, anterior view. 15, right anterior gonopod of male from Mt. Whitney, anterior view. A, process "A"; ap, accessory process; B, process "B"; C, process "C"; other abbreviations as in figs. 1-8. Scale line = 1.40 mm for figs. 12 and 15, 1.00 mm for figs. 13-14.

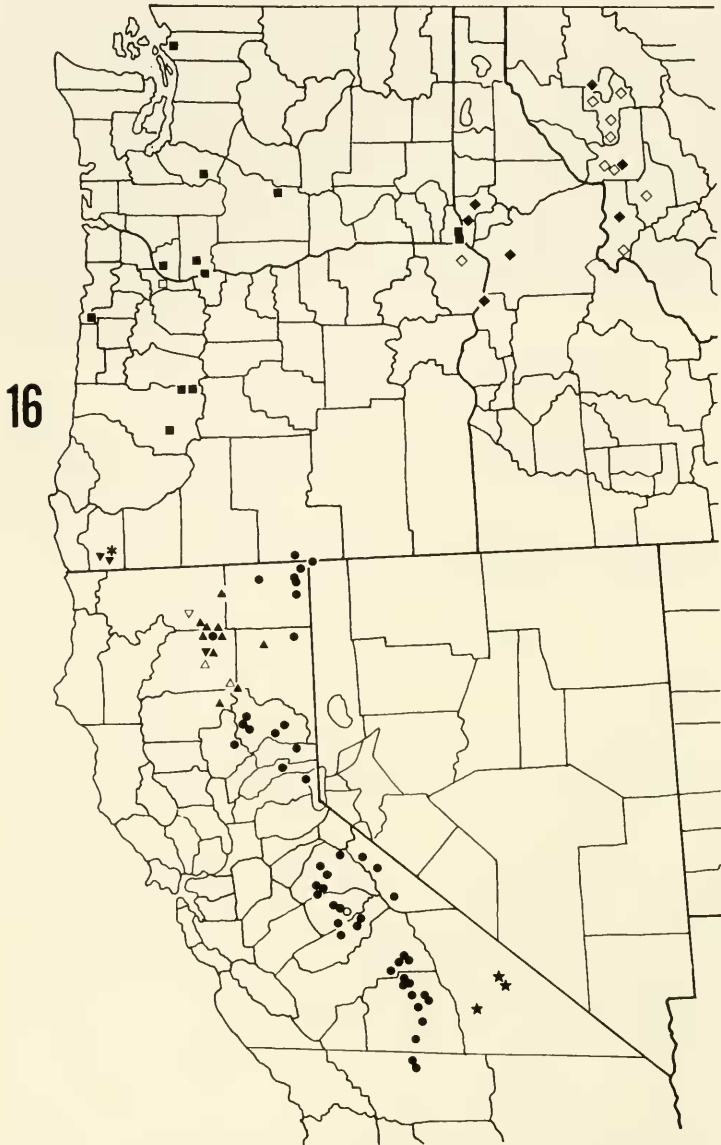


Fig. 16. Distribution of *Californiulus*. Inverted triangles, *C. chamberlini*; upright triangles, *C. dorsovittatus*; dots, *C. yosemiteis*; squares, *C. euphanus*; diamonds, *C. parvior*; stars, *C. blechrostriatus*. Open symbols denote literature records deemed valid, and the dot in Nevada County, California, represents the Sagehen Creek record of *C. yosemiteis*, whose exact location is unknown. The asterisk shows the one locality of *Arosphylosoma darcenae* Hoffman (Arosphylosomatidae), the only other species and genus in the superfamily Paeromopodoidea.

Variation. The male paratype agrees closely with the holotype, with only minor differences in the degrees of expansion and marginal spination of process 'B' of the posterior gonopod and of the intricacy of the spiculation of the anterior gonopod distal projection. The specimen from Mt. Whitney agrees with both Saline Valley males except for the anterior gonopod (Fig. 15). The apical process of its midlength projection (mlp) is shorter, narrower, and more obviously uncinately, and the distal projection (dp) is divided into two branches, instead of being expanded basally (Fig. 12), and the inner branch is short, with long, irregular, marginal teeth. Additionally, this male has an accessory spur on the medial surface of the ridge on the right anterior gonopod but not on the left one. Including the epiproct, the holotype has 67 segments, none legless, and measures 83.2 mm in length; a female paratype, the only intact and measurable specimen in this sample has 69 segments, one legless, and measures 74.9 mm in length; and the Mt. Whitney male has 73 segments, one legless, and measures 93.2 mm in length.

Ecology. *Californiulus blechrostriatus* has a marked affinity for arid environments. The only information on the vial labels with the types is the elevation of 4,200 ft. (1,260 m), but this is high desert, in the Basin and Range Physiographic Province, and Saline Valley is the next valley west of Death Valley, the lowest, and the hottest, driest place in North America. The Mt. Whitney male was discovered under a fallen, decaying pine long at 8,000 ft. (2,400 m) on the dry, eastern side of the Sierra Nevada. *Californiulus yosemitensis* can occur in relatively dry biotopes (Shelley 1994), but not to the extreme of those occupied by *C. blechrostriatus*, the easternmost representative of the family in California and the only one occurring in true desert.

Distribution. Known only from Inyo County, California, where it extends eastward from Mt. Whitney to the Saline Valley, a linear distance of approximately 38 mi (60.8 km). In addition to the type specimens, the following sample is known.

CALIFORNIA: Inyo Co., east side of Mt. Whitney, Inyo Nat. For., end of rd. to Whitney Portal, ca. 10.5 mi (16.8 km) WSW Lone Pine, M, 20 May 1970, E. A. Kane (UCD).

Remarks. As they share an undivided process "A" of the posterior gonopod, *C. blechrostriatus* is closely related to *C. yosemitensis*. They differ in the color pattern, as the former shows no trace of the yellow middorsal stripe and medial black line diagnostic of the latter, nor does *C. blechrostriatus* display the transverse banding characteristic of *C. euphanus*, *C. parvior*, and the species of *Paeromopus*. The accessory, ventral process on the posterior gonopod (Fig. 14, ap) is also unique, but the most striking feature of *C. blechrostriatus* is the extremely faint striation, which contrasts with the condition in every other species and is best seen under oblique light under a stereomicroscope. This trait is the source of the specific name, which derives from the Greek word, "blechros,"

meaning faint or weak, and "striae," meaning grooves or channels. In the key to species of *Californiulus* (Shelley 1994), *C. blechrostriatus* goes to couplet 4 because it lacks the yellow middorsal stripe, and it is readily distinguished from both *C. euphanus* and *C. parvior* by the faint striae, the accessory process of the posterior gonopod, and the simple, undivided process "A".

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LITERATURE CITED

- Buckett, J. S.** 1964. Annotated list of California Diplopoda. Simmons Publ. Co., Davis, CA, 34 pp.
- Causey, N. B.** 1955. New records and descriptions of Californian Diplopoda. Proc. Biol. Soc. Wash., 68:87-94.
- Chamberlin, R. V.** 1941. New western millipeds. Bull. Univ. Utah, 31(12) [Biol. Ser., 6(5)]:1-23.
- Chamberlin, R. V.** 1954. Six new Californian millipeds. Proc. Biol. Soc. Wash., 67:231-234.
- Loomis, H. F.** 1972. Some notes on the milliped family Paeromopodidae, with a description of a new species. Fla. Entomol., 55:259-262.
- Shelley, R. M.** 1994. Revision of the milliped family Paeromopodidae, and elevation of the Aprophylosomatinae to family status (Julida: Paeromopodoidea). Ent. Scand., 25:169-214.